

WHAT IS CLAIMED IS:

1. A method for operating a gas-generation device for generating a hydrogen-rich gas from at least one of partial oxidation of an oxygen/fuel mixture or catalytic steam reforming of a water/fuel mixture, said method comprising:

    metering a fuel into a partial oxidation reactor;

    starting combustion of the fuel by metering in oxygen-containing gas into the partial oxidation reactor, wherein a quantity of oxygen-containing gas corresponds at most to the stoichiometric ratio for complete fuel conversion;

    heating at least the partial oxidation reactor of the gas-generation device by heat from said combusting;

    reducing the quantity of the oxygen-containing gas and metering in water when an operating temperature for the partial oxidation reactor is reached, wherein at least one of a quantitative flow of the oxygen-containing gas or of the water is set such that an oxygen/fuel/water mixture is converted into hydrogen as completely as possible; and

    further reducing the quantity of the oxygen-containing gas when the operating temperature of a downstream steam reformer is reached, so that only partial conversion of the fuel takes place in the partial oxidation reactor, and a remaining part of the fuel is converted in the downstream steam reformer.

2. A method according to Claim 1, wherein, when the operating temperature of the steam reformer is reached, the supply of the oxygen-containing gas is interrupted.

3.. A method according to Claim 1, further comprising heating the steam reformer.

4. A method according to Claim 1, further comprising:  
passing product gas that is generated in the partial  
oxidation reactor (1) through an adiabatic, catalytic after-  
treatment stage; and  
converting unburnt parts of the fuel/oxygen mixture or of  
the fuel/oxygen/water mixture of the product, thereby  
minimizing an oxygen content in the product gas before it is  
fed to the steam reformer.

5. A gas-generation device for generating a hydrogen-  
rich gas from at least one of partial oxidation of an  
oxygen/fuel mixture or catalytic steam reforming of a  
water/fuel mixture, comprising:

a partial oxidation reactor;  
a steam reformer downstream of the partial oxidation  
reactor;  
an adiabatic, catalytic after-treatment stage arranged  
between the partial oxidation reactor and the steam reformer.

6. A device according to Claim 5, wherein the catalytic  
after-treatment stage comprises a precious metal-containing  
catalyst.

7. A device according to Claim 5, wherein the catalytic  
after-treatment stage comprises a catalyst support having a  
low heat capacity.

8. A device according to Claim 5, further comprising  
heating means for heating at least one of the steam reformer  
or the adiabatic, catalytic after-treatment stage.

9. A device according to Claim 5, wherein the adiabatic  
catalytic after-treatment is integrated into the partial  
oxidation reactor or the steam reformer.